

# IN THE CLAIMS

Please amend Claims 1, 2, 4, 7, 8, 10, 14-17, 19, 20, 22, 25, 26, 28, 32-35, and 37-43 as follows:

1. (Amended) A method for media delivery in a network, comprising the steps of:

- (a) determining an available bandwidth for completion of a file transmission for a time interval; and
- (b) allocating at least a portion of the available bandwidth to complete at least one file transmission task, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth.

2. (Amended) The method of claim 1, which includes the step of initializing a bandwidth allocation scheduler prior to the determining step (a), comprising the steps of:

- (a1) obtaining a plurality of system configuration parameters from a plurality of database tables;
- (a2) initializing a global step function (GSF), wherein the GSF represents a total maximum bandwidth available in the network in the time interval for completion of the file transmission; and
- (a3) subtracting from the GSF bandwidth requirements for a plurality of on-going live-video stream (LVS) jobs and LVS jobs planned from a time of initialization to a maximum transmission duration.

4. (Amended) The method of claim 1, wherein the determining step (a) comprises the steps of:

- (a1) updating a total available bandwidth for the time interval; and
- (a2) checking for the available bandwidth for completion of the file transmission for the

time interval.

7. (Amended) The method of claim 5, wherein the allocating step (a1ii) comprises the step of:

(a1iiA) subtracting from a GSF the bandwidth requirements for the plurality of LVS jobs, wherein the GSF represents a total maximum bandwidth available in the network in the time interval for completion of the file transmission.

8. (Amended) A method for media delivery in a network, comprising the steps of:

(a) determining an available bandwidth for file transmission for a time interval, comprising the steps of:

(a1) updating a total available bandwidth for the time interval, comprising the steps of:

(a1i) reading from a plurality of database tables a plurality of LVS jobs to begin during the time interval,

(a1ii) allocating bandwidth to the plurality of LVS jobs not yet allocated bandwidth, and

(a1iii) recording the allocated bandwidth to the plurality of LVS jobs in the plurality of database tables, and

(a2) checking for the available bandwidth for file transmission for the time interval, comprising the steps of:

(a2i) updating a GSF,

(a2ii) determining if enough bandwidth is available for file transmissions,

(a2iii) sending an indication if there is not enough bandwidth available for

file transmission, and

(a2iv) finding a bandwidth strip which begins at a current time, fits under the GSF, has at least a minimum amount of bandwidth that must be allocated to a file transmission task, and does not extend, in the X/time-direction, beyond a latest delivery time (LDT) of the at least one transmission task; and

(b) allocating at least a portion of the available bandwidth to at least one file transmission task, wherein each of the at least one file transmission's task may be allocated a different amount of the available bandwidth.

10. (Amended) A method for media delivery in a network, comprising the steps of:

(a) determining an available bandwidth for file transmission for a time interval; and

(b) allocating at least a portion of the available bandwidth to at least one file transmission task, wherein each of the at least one file transmissions task may be allocated a different amount of the available bandwidth, comprising the steps of:

(b1) setting an upper bound on an amount of bandwidth to a smaller of the available bandwidth and a maximum bit rate of a plurality of receivers,

(b2) gathering data for the at least one file transmission task, the gathered data including a size of the at least one file transmission task,

(b3) determining an allocation strategy selected by the customer,

(b4) computing an overhead for the at least one file transmission task,

(b5) allocating the portion of the available bandwidth based on the upper bound, the size of the at least one transmission task, the computed overhead, and the allocation strategy selected by the customer, and

(b6) recording the available bandwidth remaining after the allocation in a

plurality of database tables.

14. (Amended) The method of claim 1, further comprising:

(c) freeing any allocated available bandwidth unused by a complete transmission of the at least one file transmission task.

15. (Amended) The method of claim 14, wherein the freeing step (c) comprises the steps of:

(c1) updating a global step function (GSF), wherein the GSF represents a total maximum bandwidth available in the network in the time interval for completion of the file transmission;

(c2) constructing a payback strip from the portion of the available bandwidth allocated to the at least one file transmission task;

(c3) adding the payback strip to the GSF; and

(c4) recording an available bandwidth remaining after the adding step (c3) in a plurality of database tables.

16. (Amended) A method for media delivery in a network, comprising the steps of:

(a) determining an available bandwidth for file transmission for a time interval;

(b) allocating at least a portion of the available bandwidth to at least one file transmission task, wherein each of the at least one file transmissions task may be allocated a different amount of the available bandwidth; and

(c) freeing any allocated available bandwidth unused by a transmission of the at least one file transmission task, comprising the steps of:

~~(c1)~~ updating a GSF,

(c2) constructing a payback strip from the portion of the available bandwidth allocated to the at least one file transmission task, comprising the steps of:

(c2i) finding an expiration time corresponding to the at least one file transmission task in the plurality of database tables, and

(c2ii) constructing the payback strip that extends in an X/time-direction until the expiration time and in a Y/bandwidth direction from zero to the portion of the available bandwidth allocated to the at least one file transmission task,

(c3) adding the payback strip to the GSF, and

(c4) recording an available bandwidth remaining after the adding step (d3) in a plurality of database tables.

17. (Amended) The method of claim 1, wherein the at least one file transmission tasks [are] is scheduled back-to-back when duration of allocations are known when the allocations are made.

19. (Amended) A computer readable medium with program instructions for media delivery in a network, the instructions for:

(a) determining an available bandwidth for completion of a file transmission for a time interval; and

(b) allocating at least a portion of the available bandwidth to complete at least one file transmission task, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth.

20. (Amended) The medium of claim 19, which includes instructions for initializing a

bandwidth allocation scheduler prior to the determining instruction (a), comprising the instructions for:

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- (a1) obtaining a plurality of system configuration parameters from a plurality of database tables;
  - (a2) initializing a global step function (GSF), wherein the GSF represents a total maximum bandwidth available in the network in the time interval for completion of the file transmission; and
  - (a3) subtracting from the GSF bandwidth requirements for a plurality of on-going live-video stream (LVS) jobs and LVS jobs planned from a time of initialization to a maximum transmission duration.

*A13*

22. (Amended) The medium of claim 19, wherein the determining instruction (a) comprises the instructions for:

- (a1) updating a total available bandwidth for the time interval; and
- (a2) checking for the available bandwidth for completion of the file transmission for the time interval.

*A14*

25. (Amended) The medium of claim 23, wherein the allocating instruction (a1 ii) comprises the instructions for:

(a1 iiA) subtracting from a GSF the bandwidth requirements for the plurality of LVS jobs, wherein the GSF represents a total maximum bandwidth available in the network in the time interval for completion of the file transmission.

26. (Amended) A computer readable medium with program instructions for media

delivery in a network, the instructions for:

(a) determining an available bandwidth for file transmission for a time interval, comprising the instructions for:

(a1) updating a total available bandwidth for the time interval, comprising the instructions for:

(a1i) reading from a plurality of database tables a plurality of LVS jobs to begin during the time interval,

(a1ii) allocating bandwidth to the plurality of LVS jobs not yet allocated bandwidth, and

(a1iii) recording the allocated bandwidth to the plurality of LVS jobs in the plurality of database tables, and

(a2) checking for the available bandwidth for file transmission for the time interval, comprising the steps of:

(a2i) updating a GSF,

(a2ii) determining if enough bandwidth is available for file transmissions,

(a2iii) sending an indication if there is not enough bandwidth available for file transmission, and

(a2iv) finding a bandwidth strip which begins at a current time, fits under the GSF, has at least a minimum amount of bandwidth that must be allocated to a file transmission task, and does not extend, in the X/time-direction, beyond a LDT of the at least one transmission task; and

(b) allocating at least a portion of the available bandwidth to at least one file transmission task, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth.

28. (Amended) A computer readable medium with program instructions for media delivery in a network, the instructions for:

(a) determining an available bandwidth for file transmission for a time interval; and  
 (b) allocating at least a portion of the available bandwidth to at least one file transmission task, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth, comprising the instructions for:

(b1) setting an upper bound on an amount of bandwidth to a smaller of the available bandwidth and a maximum bit rate of a plurality of receivers,

(b2) gathering data for the at least one file transmission task, the gathered data including a size of the at least one file transmission task,

(b3) determining an allocation strategy selected by the customer,

(b4) computing an overhead for the at least one file transmission task,

(b5) allocating the portion of the available bandwidth based on the upper bound, the size of the at least one transmission task, the computed overhead, and the allocation strategy selected by the customer, and

(b6) recording the available bandwidth remaining after the allocation in a plurality of database tables.

32. (Amended) The medium of claim 19, further comprising instructions for:

(c) freeing any allocated available bandwidth unused by a complete transmission of the at least one file transmission task.

33. (Amended) The medium of claim 32, wherein the freeing instruction (c) comprises the instructions for:



(c1) updating a global step function (GSF), wherein the GSF represents a total maximum bandwidth available in the network in the time interval for completion of the file transmission;

(c2) constructing a payback strip from the portion of the available bandwidth allocated to the at least one file transmission task;

(c3) adding the payback strip to the GSF; and

(c4) recording an available bandwidth remaining after the adding step (c3) in a plurality of database tables.

34. (Amended) A computer readable medium with program instructions for media delivery in a network, the instructions for:

(a) determining an available bandwidth for file transmission for a time interval;

(b) allocating at least a portion of the available bandwidth to at least one file transmission task, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth; and

(c) freeing any allocated available bandwidth unused by a transmission of the at least one file transmission task, comprising the instructions for:

(c1) updating a GSF,

(c2) constructing a payback strip from the portion of the available bandwidth allocated to the at least one file transmission task, comprising the instructions for:

(c2i) finding an expiration time corresponding to the at least one file transmission task in the plurality of database tables, and

(c2ii) constructing the payback strip that extends in an X/time-direction until the expiration time and in a Y/bandwidth direction from zero to the portion of the available bandwidth allocated to the at least one file transmission task,

(c3) adding the payback strip to the GSF, and

(c4) recording an available bandwidth remaining after the adding step (d3) in a

plurality of database tables.

35. (Amended) The medium of claim 19, wherein the at least one file transmission tasks is scheduled back-to-back when duration of allocations are known when the allocations are made.

37. (Amended) A method for media delivery in a network, comprising the steps of:

(a) initializing a global step function (GSF), wherein the GSF represents a total maximum bandwidth available in the network in a time interval for completion of a file transmission;

(b) updating the GSF based upon bandwidth requirements for a plurality of live-video stream (LVS) jobs for a time interval;

(c) determining a size of at least one file transmission task which can be completely transmitted during the time interval based upon the updated GSF; and

(d) allocating at least a portion of the updated GSF to complete the at least one file transmission task based upon the size and an allocation strategy, wherein each of the at least one transmission task may be allocated a different amount of bandwidth.

38. (Amended) A computer readable medium with program instructions for media delivery in a network, the instructions for:

(a) initializing a global step function (GSF), wherein the GSF represents a total maximum bandwidth available in the network in a time interval for completion of a file

transmission;

(b) updating the GSF based upon bandwidth requirements for a plurality of live-video stream (LVS) jobs for a time interval;

(c) determining a size of at least one file transmission task which can be completely transmitted during the time interval based upon the updated GSF; and

(d) allocating at least a portion of the updated GSF to complete the at least one file transmission task based upon the size and an allocation strategy, wherein each of the at least one transmission task may be allocated a different amount of bandwidth.

39. (Amended) A method for media delivery in a network, comprising the steps of:

(a) determining an available bandwidth for completion of a file transmission for each of a plurality of time intervals; and

(b) allocating at least a portion of the available bandwidth to complete at least one file transmission task for each time interval, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth, wherein the at least one file transmission tasks for each time interval are scheduled back-to-back.

40. (Amended) A computer readable medium with program instructions for media delivery in a network, the instructions for:

(a) determining an available bandwidth for completion of a file transmission for each of a plurality of time intervals; and

(b) allocating at least a portion of the available bandwidth to complete at least one file transmission task for each time interval, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth, wherein the at least one file

transmission tasks for each time interval are scheduled back-to-back.

41. (Amended) A method for media delivery in a network, comprising the steps of:

- (a) determining an available bandwidth for completion of a file transmission for a time interval; and
- (b) allocating at least a portion of the available bandwidth to complete at least one file transmission task, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth, wherein the allocated available bandwidth varies as a polynomial in time.

42. (Amended) A computer readable medium with program instructions for media delivery in a network, the instructions for:

- (a) determining an available bandwidth for completion of a file transmission for a time interval; and
- (b) allocating at least a portion of the available bandwidth to complete at least one file transmission task, wherein each of the at least one file transmission task may be allocated a different amount of the available bandwidth, wherein the allocated available bandwidth varies as a polynomial in time.

43. (Amended) A system, comprising:

a server, comprising a manager for file transmissions via a satellite transponder, wherein the manager comprises a bandwidth allocation scheduler, the bandwidth allocation scheduler capable of determining an available bandwidth for completion of a file transmission for a time interval, and allocation at least a portion of the available bandwidth to complete at least one file transmission

task, wherein a different amount of an available bandwidth to each of a plurality of file transmission

tasks; and

a database table coupled to the server, comprising information required by the manager for

file transmissions.